

SEQUENCE LISTING

<110> Horton, Holly  
Parker, Suezanne  
Manthorpe, Marston  
Felgner, Philip

<120> Treatment of Cancer Using Cytokine-Expressing  
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<150> US 60/079,914

<151> 1998-03-30

<150> US 60/100,820

<151> 1998-09-15

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aagcagacag ttttattgtt catgatgata tattttatc ttgtgcaatg taacatcaga 5040  
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<211> 585  
<212> DNA  
<213> Homo sapiens

<220>  
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<220>  
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-20 -15 -10

agc cct gtt gga tct ctg ggc tgt gat ctg cct cag aac cat ggc cta 96  
Ser Pro Val Gly Ser Leu Gly Cys Asp Leu Pro Gln Asn His Gly Leu  
-5 -1 1 5

ctt agc agg aac acc ttg gtg ctt ctg cac caa atg agg aga atc tcc 144  
Leu Ser Arg Asn Thr Leu Val Leu Leu His Gln Met Arg Arg Ile Ser  
10 15 20 25

cct ttc ttg tgt ctc aag gac aga aga gac ttc agg ttc ccc cag gag 192  
Pro Phe Leu Cys Leu Lys Asp Arg Arg Asp Phe Arg Phe Pro Gln Glu  
30 35 40

atg gta aaa ggg agc cag ttg cag aag gcc cat gtc atg tct gtc ctc 240  
Met Val Lys Gly Ser Gln Leu Gln Lys Ala His Val Met Ser Val Leu  
45 50 55

cat gag atg ctg cag cag atc ttc agc ctc ttc cac aca gag cgc tcc 288  
His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe His Thr Glu Arg Ser

	60	65	70	
tct gct gcc tgg aac atg acc ctc cta gac caa ctc cac act gga ctt				336
Ser Ala Ala Trp Asn Met Thr Leu Leu Asp Gln Leu His Thr Gly Leu				
75	80	85		
cat cag caa ctg caa cac ctg gag acc tgc ttg ctg cag gta gtg gga				384
His Gln Gln Leu Gln His Leu Glu Thr Cys Leu Leu Gln Val Val Gly				
90	95	100	105	
gaa gga gaa tct gct ggg gca att agc agc cct gca ctg acc ttg agg				432
Glu Gly Glu Ser Ala Gly Ala Ile Ser Ser Pro Ala Leu Thr Leu Arg				
110	115	120		
agg tac ttc cag gga atc cgt gtc tac ctg aaa gag aag aaa tac agc				480
Arg Tyr Phe Gln Gly Ile Arg Val Tyr Leu Lys Glu Lys Lys Tyr Ser				
125	130	135		
gac tgt gcc tgg gaa gtt gtc aga atg gaa atc atg aaa tcc ttg ttc				528
Asp Cys Ala Trp Glu Val Val Arg Met Glu Ile Met Lys Ser Leu Phe				
140	145	150		
tta tca aca aac atg caa gaa aga ctg aga agt aaa gat aga gac ctg				576
Leu Ser Thr Asn Met Gln Glu Arg Leu Arg Ser Lys Asp Arg Asp Leu				
155	160	165		
ggc tca tct				585
Gly Ser Ser				
170				
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Ser Pro Val Gly Ser Leu Gly Cys Asp Leu Pro Gln Asn His Gly Leu				
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Leu Ser Arg Asn Thr Leu Val Leu Leu His Gln Met Arg Arg Ile Ser				
10	15	20	25	
Pro Phe Leu Cys Leu Lys Asp Arg Arg Asp Phe Arg Phe Pro Gln Glu				
30	35	40		
Met Val Lys Gly Ser Gln Leu Gln Lys Ala His Val Met Ser Val Leu				
45	50	55		

His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe His Thr Glu Arg Ser  
60 65 70

Ser Ala Ala Trp Asn Met Thr Leu Leu Asp Gln Leu His Thr Gly Leu  
75 80 85

His Gln Gln Leu Gln His Leu Glu Thr Cys Leu Leu Gln Val Val Gly  
90 95 100 105

Glu Gly Glu Ser Ala Gly Ala Ile Ser Ser Pro Ala Leu Thr Leu Arg  
110 115 120

Arg Tyr Phe Gln Gly Ile Arg Val Tyr Leu Lys Glu Lys Lys Tyr Ser  
125 130 135

Asp Cys Ala Trp Glu Val Val Arg Met Glu Ile Met Lys Ser Leu Phe  
140 145 150

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155 160 165

Gly Ser Ser  
170

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<212> DNA  
<213> Homo sapiens

<220>  
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<220>  
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<400> 9  
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-20 -15 -10

aag tca agc tgc tct ctg ggc tgt gat ctc cct gag acc cac agc ctg 96  
Lys Ser Ser Cys Ser Leu Gly Cys Asp Leu Pro Glu Thr His Ser Leu  
-5 -1 1 5

gat aac agg agg acc ttg atg ctc ctg gca caa atg agc aga atc tct 144

Asp Asn Arg Arg Thr Leu Met Leu Leu Ala Gln Met Ser Arg Ile Ser			
10	15	20	25
cct tcc tcc tgt ctg atg gac aga cat gac ttt gga ttt ccc cag gag			192
Pro Ser Ser Cys Leu Met Asp Arg His Asp Phe Gly Phe Pro Gln Glu			
30	35	40	
gag ttt gat ggc aac cag ttc cag aag gct cca gcc atc tct gtc ctc			240
Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Pro Ala Ile Ser Val Leu			
45	50	55	
cat gag ctg atc cag cag atc ttc aac ctc ttt acc aca aaa gat tca			288
His Glu Leu Ile Gln Gln Ile Phe Asn Leu Phe Thr Thr Lys Asp Ser			
60	65	70	
tct gct gct tgg gat gag gac ctc cta gac aaa ttc tgc acc gaa ctc			336
Ser Ala Ala Trp Asp Glu Asp Leu Leu Asp Lys Phe Cys Thr Glu Leu			
75	80	85	
tac cag cag ctg aat gac ttg gaa gcc tgt gtg atg cag gag gag agg			384
Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Met Gln Glu Glu Arg			
90	95	100	105
gtg gga gaa act ccc ctg atg aat gcg gac tcc atc ttg gct gtg aag			432
Val Gly Glu Thr Pro Leu Met Asn Ala Asp Ser Ile Leu Ala Val Lys			
110	115	120	
aaa tac ttc cga aga atc act ctc tat ctg aca gag aag aaa tac agc			480
Lys Tyr Phe Arg Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser			
125	130	135	
cct tgt gcc tgg gag gtt gtc aga gca gaa atc atg aga tcc ctc tct			528
Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Leu Ser			
140	145	150	
tta tca aca aac ttg caa gaa aga tta agg agg aag gaa			567
Leu Ser Thr Asn Leu Gln Glu Arg Leu Arg Arg Lys Glu			
155	160	165	
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<211> 189			
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<213> Homo sapiens			
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Asp Asn Arg Arg Thr Leu Met Leu Leu Ala Gln Met Ser Arg Ile Ser  
10 15 20 25

Pro Ser Ser Cys Leu Met Asp Arg His Asp Phe Gly Phe Pro Gln Glu  
30 35 40

Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Pro Ala Ile Ser Val Leu  
45 50 55

His Glu Leu Ile Gln Gln Ile Phe Asn Leu Phe Thr Thr Lys Asp Ser  
60 65 70

Ser Ala Ala Trp Asp Glu Asp Leu Leu Asp Lys Phe Cys Thr Glu Leu  
75 80 85

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Met Gln Glu Glu Arg  
90 95 100 105

Val Gly Glu Thr Pro Leu Met Asn Ala Asp Ser Ile Leu Ala Val Lys  
110 115 120

Lys Tyr Phe Arg Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser  
125 130 135

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Leu Ser  
140 145 150

Leu Ser Thr Asn Leu Gln Glu Arg Leu Arg Arg Lys Glu  
155 160 165

<210> 11

<211> 567

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1)..(567)

<220>

<221> sig\_peptide

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<220>

<221> mat\_peptide

<222> (70)..(567)

<400> 11

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-20 -15 -10

tgg cca acc tgc tct cta gga tgt gac ctg cct cag act cat aac ctc	96
Trp Pro Thr Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Asn Leu	
-5 -1 1 5	
agg aac aag aga gcc ttg aca ctc ctg gta caa atg agg aga ctc tcc	144
Arg Asn Lys Arg Ala Leu Thr Leu Leu Val Gln Met Arg Arg Leu Ser	
10 15 20 25	
cct ctc tcc tgc ctg aag gac agg aag gac ttt gga ttc ccg cag gag	192
Pro Leu Ser Cys Leu Lys Asp Arg Lys Asp Phe Gly Phe Pro Gln Glu	
30 35 40	
aag gtg gat gcc cag cag atc aag aag gct caa gcc atc cct gtc ctg	240
Lys Val Asp Ala Gln Gln Ile Lys Lys Ala Gln Ala Ile Pro Val Leu	
45 50 55	
agt gag ctg acc cag cag atc ctg aac atc ttc aca tca aag gac tca	288
Ser Glu Leu Thr Gln Gln Ile Leu Asn Ile Phe Thr Ser Lys Asp Ser	
60 65 70	
tct gct gct tgg aat gca acc ctc cta gac tca ttc tgc aat gac ctc	336
Ser Ala Ala Trp Asn Ala Thr Leu Leu Asp Ser Phe Cys Asn Asp Leu	
75 80 85	
cac cag cag ctc aat gac ctg caa ggt tgt ctg atg cag cag gtg ggg	384
His Gln Gln Leu Asn Asp Leu Gln Gly Cys Leu Met Gln Gln Val Gly	
90 95 100 105	
gtg cag gaa ttt ccc ctg acc cag gaa gat gcc ctg ctg gct gtg agg	432
Val Gln Glu Phe Pro Leu Thr Gln Glu Asp Ala Leu Leu Ala Val Arg	
110 115 120	
aaa tac ttc cac agg atc act gtg tac ctg aga gag aag aaa cac agc	480
Lys Tyr Phe His Arg Ile Thr Val Tyr Leu Arg Glu Lys Lys His Ser	
125 130 135	
ccc tgt gcc tgg gag gtg gtc aga gca gaa gtc tgg aga gcc ctg tct	528
Pro Cys Ala Trp Glu Val Val Arg Ala Glu Val Trp Arg Ala Leu Ser	
140 145 150	
tcc tct gcc aat gtg ctg gga aga ctg aga gaa gag aaa	567
Ser Ser Ala Asn Val Leu Gly Arg Leu Arg Glu Glu Lys	
155 160 165	

<210> 12  
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<212> PRT  
<213> Mus musculus

<400> 12

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-20 -15 -10

Trp Pro Thr Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Asn Leu  
-5 -1 1 5

Arg Asn Lys Arg Ala Leu Thr Leu Leu Val Gln Met Arg Arg Leu Ser  
10 15 20 25

Pro Leu Ser Cys Leu Lys Asp Arg Lys Asp Phe Gly Phe Pro Gln Glu  
30 35 40

Lys Val Asp Ala Gln Gln Ile Lys Lys Ala Gln Ala Ile Pro Val Leu  
45 50 55

Ser Glu Leu Thr Gln Gln Ile Leu Asn Ile Phe Thr Ser Lys Asp Ser  
60 65 70

Ser Ala Ala Trp Asn Ala Thr Leu Leu Asp Ser Phe Cys Asn Asp Leu  
75 80 85

His Gln Gln Leu Asn Asp Leu Gln Gly Cys Leu Met Gln Gln Val Gly  
90 95 100 105

Val Gln Glu Phe Pro Leu Thr Gln Glu Asp Ala Leu Leu Ala Val Arg  
110 115 120

Lys Tyr Phe His Arg Ile Thr Val Tyr Leu Arg Glu Lys Lys His Ser  
125 130 135

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Val Trp Arg Ala Leu Ser  
140 145 150

Ser Ser Ala Asn Val Leu Gly Arg Leu Arg Glu Glu Lys  
155 160 165

<210> 13  
<211> 459  
<212> DNA  
<213> Homo sapiens

<220>  
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<220>  
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<220>  
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<222> (61) . . (459)

<210> 14  
<211> 153  
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<213> *Homo sapiens*

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Val Thr Asn Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu  
-1 1 5 10

Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile  
15 20 25

Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe  
30 35 40

Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu  
45 50 55 60

Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys  
65 70 75

Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile  
80 85 90

Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala  
95 100 105

Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe  
110 115 120

Cys Gln Ser Ile Ile Ser Thr Leu Thr  
125 130

<210> 15  
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<212> DNA  
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<220>  
<223> Description of Artificial Sequence:PCR oligo

<400> 15  
aactgcagat ggctaggctc tgtgct 26

<210> 16  
<211> 26  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence:PCR oligo

<400> 16  
gaagatcttc atttctcttc tctcag 26

<210> 17  
<211> 26  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence:PCR oligo

<400> 17  
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26

<210> 18  
<211> 28  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence:PCR oligo

<400> 18  
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28

<210> 19  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PCR oligo

<400> 19  
gctcttagatg gccctccgt tccct

25

<210> 20  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PCR oligo

<400> 20  
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26

<210> 21  
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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR oligo

<400> 21

acgcgtcgtac atgtgtcctc agaagctaac catctc

36

<210> 22

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR oligo

<400> 22

gcggatccctt aggtatcgac cctgcaggaa acac

34

<210> 23

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR oligo

<400> 23

catgccatgg gtcaatcactg ctaccccttc tttttgg

37

<210> 24

<211> 30

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR oligo

<400> 24

gcggatccctc aggccggagct cagatagccc

30

<210> 25

<211> 5469

<212> DNA

<213> Mus musculus

<220>

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<221> mat\_peptide

<222> (1995)..(2393)

<400> 25

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ttggcgggtg tcggggctgg ctttaactatg cggcatcaga gcagattgtt ctgagagtgc 180  
acatatgcg gtgtgaaata ccgcacagat gcgttaaggag aaaataccgc atcagattgg 240  
ctattggcca ttgcatacgt tttatccata tcataatatg tacatttata ttggctcatg 300  
tccaacatta cgcgcattgtt gacattgatt attgactagt tattatagt aatcaattac 360  
gggtcatta gttcatagcc cttatatggc gttccgcgtt acataactta cggtaatgc 420  
ccgcctggc tgaccgcccc aacccccccg cccattgacg tcaataatga cgtatgttcc 480  
catagtaacg ccaataggga ctttccattg acgtcaatgg gtggagtatt tacggtaaac 540  
tgcccacttg gcagtacatc aagtgtatca tatgccaagt acgcccccta ttgacgtca 600  
tgacggtaaa tggccgcct ggcattatgc ccagtacatg accttatggg actttcctac 660  
ttggcagttac atctacgtat ttttgcattgc tattaccatg gtgatgcgtt tttggcagta 720  
catcaatggg cgtggatagc gtttgactc acggggattt ccaagtctcc accccattga 780  
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